

catkins, nutlets and pollen of these shrubs in the Arnold Arboretum.

It should be added in conclusion that it has not been possible hitherto to secure any experimental evidence of the hybrid nature of *B. Purpusii* such as presented in the foregoing paragraphs for *B. Sandbergi*. Fruit has been collected from various stations and plantings made under different temperature conditions but no seedlings have been obtained. An examination of numerous nutlets from all the collections available has recently been made and in no cases were they found to contain seed. This, together with the uniform failure to get any germination, indicates a probable complete sterility of the hybrid for the Minnesota region at least. From a comment by Schneider (l. c. p. 102) it can be inferred that a plant in Darmstadt, which he designated as *B. Purpusii* var. *luteoides* was derived from the Michigan hybrid, although it is not expressly stated. If the inference is correct then it follows that the hybrid at least occasionally produces fertile seed and furthermore that segregation also takes place for he adds that the variety is a tree-like shrub resembling *B. lutea* much more closely than the shrubby plant from Clark's Lake which he names var. *typica*.

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EXPLANATION OF PLATE 170.

FIG. 1. *Betula Sandbergi* F₁ from Hennepin County, Minn.; FIGS. 2-6 F₂ segregates cultivated at the Arnold Arboretum from seed obtained from plant in FIG. 1 (see text).

AN UNCOMMON ASSOCIATION OF PINES IN NORTHERN NEW YORK

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DURING the latter part of May, 1925, while engaged in work connected with white pine blister rust control in the town of Chesterfield, Essex County, N. Y., for the New York Conservation Department, I noticed an old field which was growing up to pine. The conspicuous feature here was a dense grove of jack pine (*Pinus Banksiana*, Lamb.) occupying perhaps a tenth of an acre, the trees ranging from four to six inches in diameter and about 25 feet high. Growing in the same field were other groups and individuals of the jack pine, and also of pitch pine (*Pinus rigida*, Mill.), red pine (*P. resinosa*, Ait.) and a very few white pine (*P. Strobus*, L.). The

reproduction on this area was a curious mixture, composed principally of *P. Banksiana* and *P. rigida* in considerable abundance. The former species appeared on the whole to be the more aggressive, occasionally even surrounding a pitch pine seed tree, to the detriment of the latter's offspring. Counts taken later on a few sample milacres indicated the density of the reproduction to be as high as six or seven thousand trees per acre in places, with a general average of probably two or three thousand. About 8 acres were covered by this formation, which was highly variable, with all degrees of stocking, mixture and age classes. To the west, the pitch pine and red pine became increasingly dominant, with an open stand of almost pure red pine in the extreme west end.

This field occupies about 50 acres of a sandy bench on the south side of the Ausable River opposite the village of Clintonville, at the top of a steep highway ascent from the river known as "Clintonville Hill." The present owner, Mr. J. McAuliffe, states that the land has not been mowed for at least 30 years, but has been almost constantly pastured, at times heavily, by cattle and horses.

The intimate association here of *Pinus Banksiana* and *P. rigida* was of considerable interest to me, as I had not seen anything similar before, nor have I since, except for a few less striking examples in the same locality. Although the ranges of these two species overlap to a considerable extent, they are not commonly thought of as associates. It is true that they are to be found in the same locality on Mt. Desert Island, Me.; both, according to Rand¹ occur there on Green Mtn., but in different situations. In northern Maine, for the most part, *Pinus Banksiana* is reported from various scattered stations north of the range of *Pinus rigida*. In New Hampshire, curiously enough, isolated individuals of the latter species have been found at Shelburne² some 40 miles north of some equally isolated specimens of jack pine in the town of Thornton.³ In the Champlain Valley, *Pinus rigida* is abundant on both sides of the lake, occurring near the shore and for some distance up the courses of rivers emptying into the lake. *Pinus Banksiana*, on the other hand, while rare in Vermont,⁴ is found more frequently on the New York⁵ side, partic-

¹ Rand: RHODORA I. (1899) p. 135.

² Deane: RHODORA XI. (1909) p. 21.

Ibid. XII. (1910) p. 99.

³ Bull. Torrey Bot. Club XVIII. (1891) p. 150.

⁴ Clark: Trees of Vermont. Bull. Vt. Agr. Expt. Sta. 73 (1899).

⁵ N. Y. State Mus. Vol. V. No. 25 (1898) Rept. State Botanist.

ularly in the Ausable Valley, where it is quite common. According to the writer's own observations, it is to be met with frequently from the vicinity of Clintonville, mentioned above, as far as Upper Jay, a distance along the river of about 15 miles; pitch pine is abundant up to Ausable Forks, 5 miles above Clintonville, but practically disappears between there and Lower Jay. The meeting ground of the two species is thus restricted essentially to a five or ten mile reach along the valley. Even in this section, the species are ordinarily not found together in any abundance on the same site, leading further to the conclusion that the condition described on the Clintonville area is a rather uncommon occurrence.

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RORIPA ISLANDICA AND *R. HISPIDA*

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WHILE looking over with Brother Victorin his collection of 1927 from Anticosti I was impressed with the unusual appearance of the material which he had labeled *Roripa palustris* (L.) Bess. The Anticosti plant differed at once from the common American plant which we generally know as *R. palustris* in its more delicate texture and in its uniformly pinnate or deeply pinnatifid leaves, much as in *R. sylvestris* (L.) Bess.; the common American plant being coarser and stiffer, with heavier foliage, the lower leaves merely somewhat pinnatifid or runcinate at base, the upper coarsely toothed to subentire. The latter plant is common across North America and extends into eastern Asia and in America is passing as *R. palustris* (glabrous and with pods usually ellipsoid) and var. *hispida* (Desv.) Rydb. (more or less hirsute and with pods tending to be subglobose). A few sheets from eastern America match the Anticosti plant and upon comparison are found to be unquestionably the European *R. palustris*. Whether this plant is native in eastern America is doubtful, for several of the specimens come from ballast-lands or from ports or roadsides; but others are from river-banks or other natural habitats.

The combination *Roripa palustris* proves, however, not to carry the